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T.B.

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/398,652 09/17/99 SAMARAS

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QM32/0618

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| EXAMINER |
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| CHANG, R | |
| ART UNIT | PAPER NUMBER |

3729

DATE MAILED:

06/18/01

V

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/398,652

Applicant(s)

SAMARAS ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19 and 21-26 is/are pending in the application.
- 4a) Of the above claim(s) 22, 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 21, 23 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

1. The request filed on May 24, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/398,652 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Amendment

2. Applicants' request to change the attorney docket number has not been entered. This docket number is not found in the applicants' specification.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

4. The abstract of the disclosure is objected to because the abstract does not describe the method of assembling a multi-chip device sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 19, 21, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gedney et al (US 5,483,421) in view of Beers (US 5,680,936).

Re claim 19: Gedney discloses providing an interposer (24) having a first surface (26) and a second surface (28); populating the second surface with a plurality of conductive pads (32); coupling a solder ball (44) to each of selected ones of the plurality of conductive pads (32); coupling at least one semiconductor die (20) to the first surface (26); and coupling the interposer (24) to a substrate (38) with the solder balls (44).

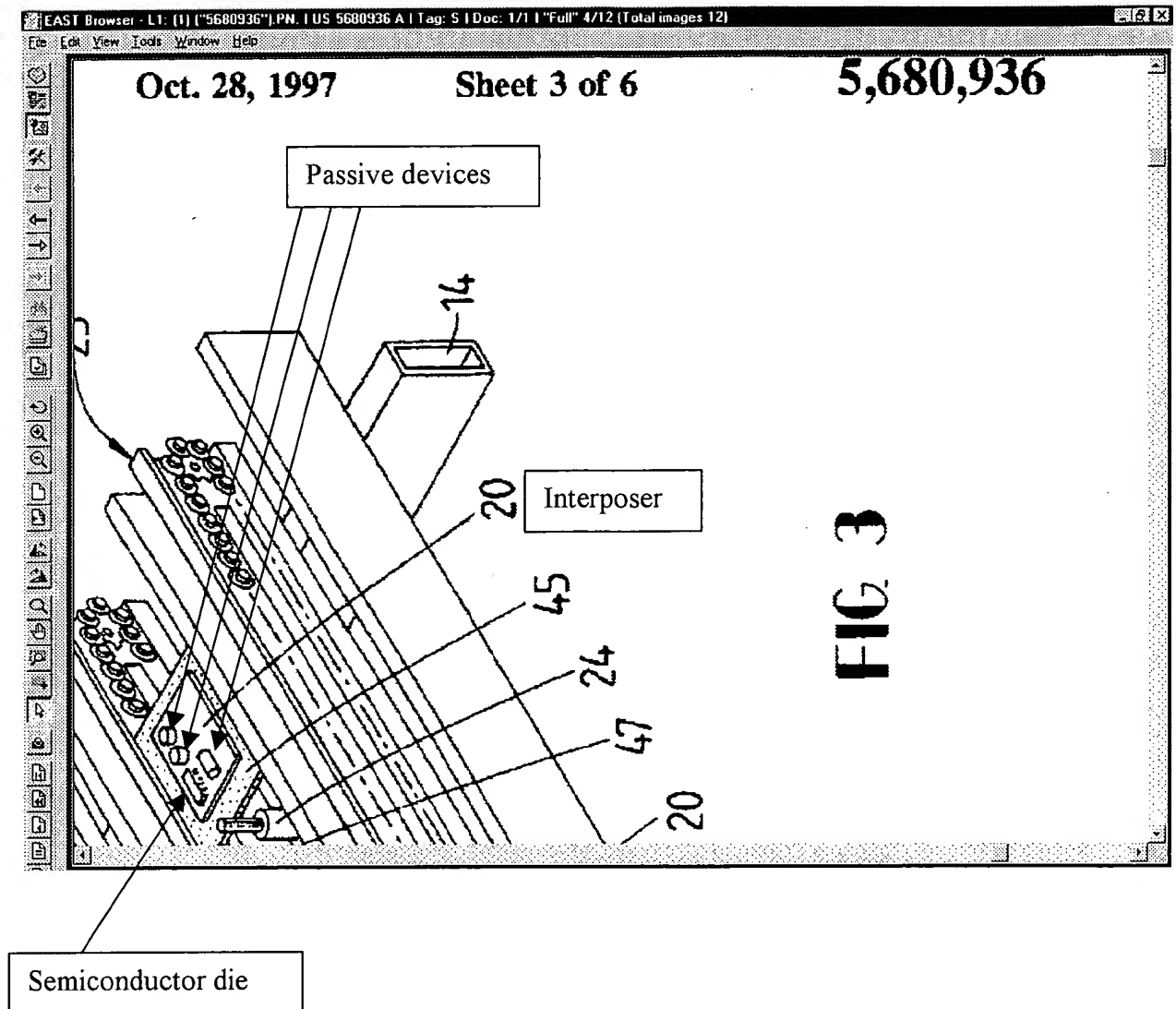
Gedney fails to disclose coupling at least one passive device to the first surface, testing the at least one semiconductor die, and coupling the interposer to the substrate after the testing if the at least one semiconductor die passes the testing.

Beers discloses coupling at least one passive device (marked-up Fig. 3 below) to the first surface of the interposer (20) and testing the at least one semiconductor die (col. 7, lines 26-29 and col. 7, lines 46-48, discloses that the board or interposer 20 is tested. Therefore, the semiconductor chip and passive devices mounted on the interposer 20 are tested to determine whether they are "good" or "bad") thereby regulating voltage and current to the electronic chip and minimizing defective electronic components to increase customer satisfaction (col. 1, lines 36-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gedney by coupling at least one passive device to the first surface of the interposer and testing the at least one semiconductor die to determine whether the semiconductor die is defective or not before coupling the interposer to the substrate, as taught by Beers, for the

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purpose of regulating voltage and current to the electronic chip and minimizing defective electronic components to increase customer satisfaction.



Re claim 21: Gedney discloses fabricating the interposer (24) with organic material (col. 7, lines 15-16).

Re claim 23: Gedney teaches the invention as described with respect to claim 19 above.

Gedney fails to disclose not coupling the interposer to the substrate if the at least one semiconductor die does not pass the testing.

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Beers discloses that if the interposer (20) is "bad", the interposer (20) is disposed (col. 7, lines 58-61) thereby providing reliable electronic components to satisfy consumer and business demands (col. 1, lines 36-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gedney by disposing the interposer with at least one defective die without coupling the defective interposer to the substrate, as taught by Beers, for the purpose of providing reliable electronic components to satisfy consumer and business demands.

Re claim 26: Gedney discloses creating a plurality of contacts (42) on the substrate (38); and electrically connecting the selected ones of the plurality of conductive pads to the plurality of contacts (Fig. 5 shows conductive pads 32 are electrically connected to the contacts 42 via solder balls 44).

Response to Arguments

7. Applicant's arguments filed May 24, 2001 have been fully considered but they are not persuasive.

With respect to the Beers reference, Beers discloses coupling at least one passive device (marked-up Fig. 3 above) to the first surface of the interposer (20). Beers discloses testing the interposer 20 in col. 7, lines 26-29. Since the semiconductor chip and passive devices mounted on the interposer 20 are being tested, these components are tested along with the interposer 20. Further, in col. 7, lines 46-48 states that a tester T is capable of identifying the specific problem with an interposer 20, such as whether the semiconductor die is defective or not. With respect to applicants' argument that Beers does not couple the tested assembly to anything, Gedney teaches the coupling step in Paragraph No. 6 above.

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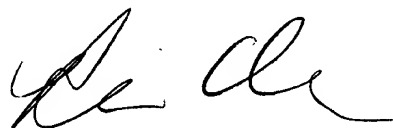
To the contrary to the applicants' argument, it is believed that testing is an integral part of any manufacturing processes, especially in electronic component manufacturing, to reduce manufacturing costs and provide high quality products. This is clearly indicated in the Beers reference (col. 1, lines 36-43).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lee Young can be reached on (703) 308-5274. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3579 for regular communications and (703) 305-3579 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703).



Rick K. Chang
Examiner
Art Unit 3729

RC
June 18, 2001